



Surgical Technique

Shoulder Revision System

Aequalis® Reversed Adapter



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TORNIER
SURGICAL IMPLANTS



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INTRODUCTION

The Aequalis® Reversed Adapter has been especially designed to facilitate the revision of the Primary (Press-Fit or Cemented) Fracture or Modular stems.

The Aequalis® Reversed Adapter is an implant designed to allow the transformation of Aequalis® Anatomical (Monobloc, Modular or Press-fit) or Aequalis® Fracture stems into components of a reversed prosthesis without removal of the humeral stem if the stem is well fixed along its whole length during revision surgery.

The Aequalis® Reversed Adapter restores the inclination angle of the Aequalis® Reversed prosthesis (155°). However, its geometry does not allow the reproduction of the same height as for the Reversed implant. It is therefore essential to ensure the correct tension of the soft tissues and the insertion of the greater tuberosity under the acromion during trials. (Where there is excessive tension on the soft tissues or subacromial impingement, the humeral stem must be removed and replaced by an Aequalis® Reversed humeral stem).

The Aequalis® Reversed Adapter is impacted on the trunion of the stem. It is essential that the assembly is secured.



Aequalis® Reversed Adapter

● Two securing methods are possible, dependent upon the type of stem implanted:

- **The Aequalis® Fracture and Modular stems** have a threaded hole in the axis of the trunion and the marking of the angle of inclination of the collar (fig. A). Once the appropriate inclination of the Aequalis® Reversed Adapter chosen, the securing is performed by tightening a safety screw into the threaded hole.

- **The Aequalis® Cemented and Press-Fit stems** have no threaded hole in the axis of the trunion (fig. B). The securing is performed using a metallic u-clip, that when tightened allows the engagement of two hooks underneath the collar.

Some implants do not have the inclination angle marked on the collar stem. In these cases, the inclination angle will be measured using a goniometer available in the instrumentation.

Note : Prior to the case, it is preferable to gather information relating to the humeral stem currently in place (model, size, reference, angle of inclination, date of implantation...).

(fig. A)



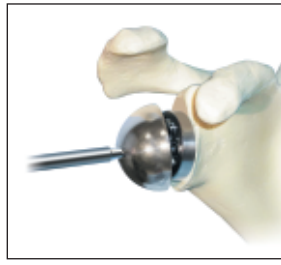
(fig. B)



SYNOPSIS OF IMPLANTATION



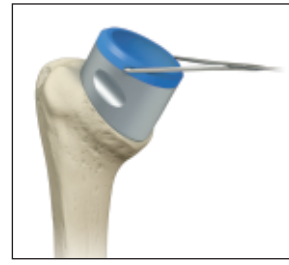
1. Removal of the head



2. Glenoid preparation



3. Measurement of the inclination of the neck



4. Fitting the trial implants

5. Assembling the definitive implant



A

Aequalis® Fracture or
Aequalis® Modular stems



1- Impaction of the metal metaphysis



2- Securing the assembly via the central screw



B

Aequalis® Cemented or
Aequalis® Press-Fit stems



1- Preparation of holes for securing the u-clip



2- Impaction of the metal metaphysis



3- Securing the assembly



6. Impaction of the insert



7. The assembly is finished



SURGICAL TECHNIQUE

● 1. Removal of the head

The head may be removed using an osteotome or with the extraction instrumentation (YKAD44), which is available upon request (fig. 01).

Note :

If the removal of the head is difficult from a Cemented implant, it may be secured by a locking screw. The entire stem and head will have to be removed if this is the case.

At this stage, it should be ensured that the stem in place is well fixed and that the trunion has not been damaged.

(fig. 01)



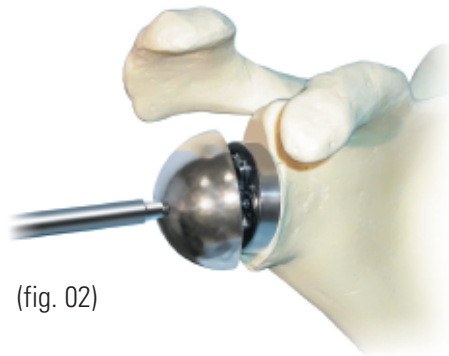
Ensure that the trunion is not damaged from the head removal process.

● 2. Glenoid preparation

The fitting of the glenoid components requires the use of the Aequalis® Reversed instrumentation.

The surgical technique is identical to that of the Aequalis® Reversed.

The permanent glenoid baseplate, screws and the glenoid sphere must be implanted prior to the adapter assembly (fig. 02).



(fig. 02)

SURGICAL TECHNIQUE

● 3. Determining the neck inclination

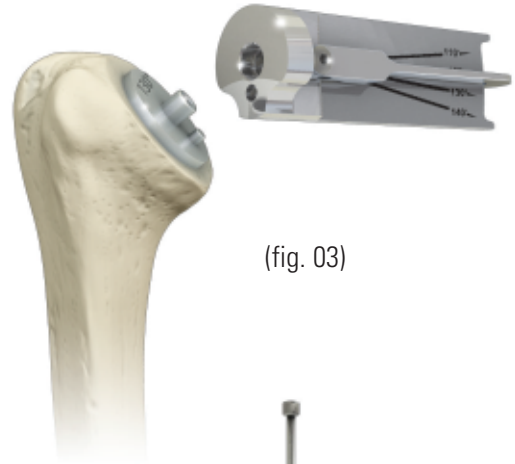
In order to restore the geometry of the Aequalis® Reversed Adapter prosthesis, it is necessary to know the inclination angle of the stem previously implanted. The neck inclination angle can be determined intraoperatively using the goniometer available in the instrumentation set (fig. 03).

The goniometer is placed over the trunion of the stem in place. The reading of the inclination is made by aligning the orientation rod with the axis of the humerus (fig. 03b). It is important to verify that the little hole of the goniometer is fully engaged onto the antirotational tab of the collar.

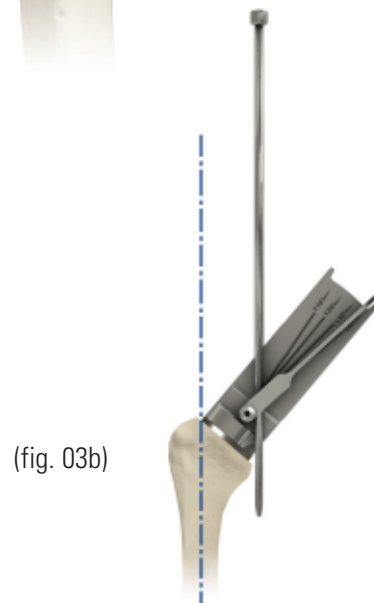
● 4. Fitting the trial implants

Select and position the Aequalis® Reversed Adapter trial corresponding to the inclination of the previously implanted stem or of that measured intraoperatively with the goniometer (fig. 04).

The diameter of the adapter is identical, regardless of the glenoid sphere diameter.



(fig. 03)



(fig. 03b)



(fig. 04)

SURGICAL TECHNIQUE

Inserts are available in two diameters and thus have the ability to adapt to both glenoid sphere diameters (\varnothing 36 mm and 42 mm).

Several thicknesses are provided (fig. 05) to determine the proper soft tissue tension:

- \varnothing 36 mm thickness +6 mm ; +9 mm ; +12 mm
- \varnothing 42 mm thickness +6 mm ; +9 mm ; +12 mm

A trial insert clamp is available to facilitate the manipulation of the trial inserts once these have been chosen (fig. 06).

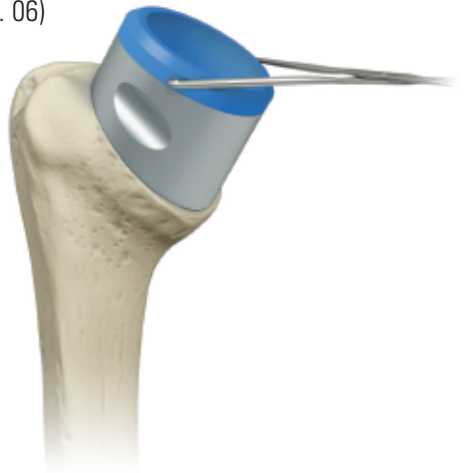
A trial reduction and range of motion are assessed at this time.

The final assembly is started (fig. 07).

(fig. 05)



(fig. 06)



(fig. 07)



SURGICAL TECHNIQUE

● 5. Assembling the definitive implants

At this stage, the technique differs according to the stem in place :

- Aequalis® Fracture or Aequalis® Modular stems: **A**
- Aequalis® Cemented or Aequalis® Press-Fit stems : **B**

● **A** Aequalis® Fracture or Aequalis® Modular stems

Note :

Take care to remove the central assembly screw from the packaging (fig. 08).

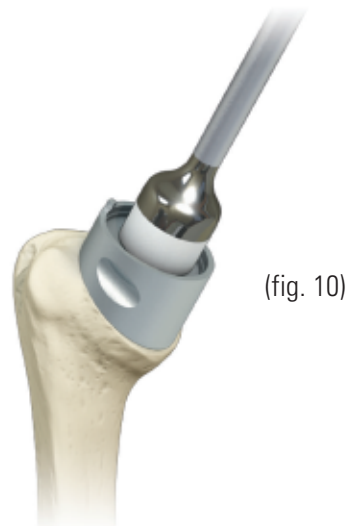
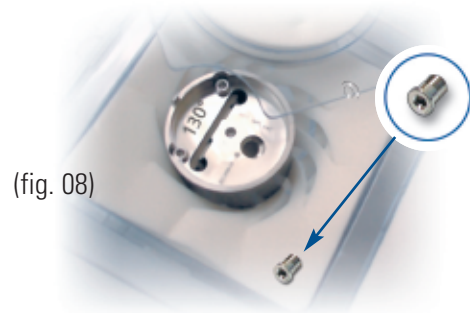
The structure is secured with a central screw.
The metallic u-clip and the 2 pressure screws must be removed from the adapter and discarded (fig. 09).

Note :

Prior to implanting the definitive implant, it is advisable to ensure the trunion has not been damaged. Cleaning and drying the trunion prior to impacting is also recommended. If the trunion is damaged, the humeral stem must be removed and replaced with an Aequalis® Reversed humeral stem.

1 - Impaction of the adapter

The adapter is positioned on the trunion of the collar, then impacted using the specific impactor (fig. 10).



SURGICAL TECHNIQUE

2 - Securing the assembly via the central screw

The assembly screw is inserted into the lower hole ("ASSEMBLY SCREW"), then tightened using the 3.5 mm screwdriver (fig. 11).

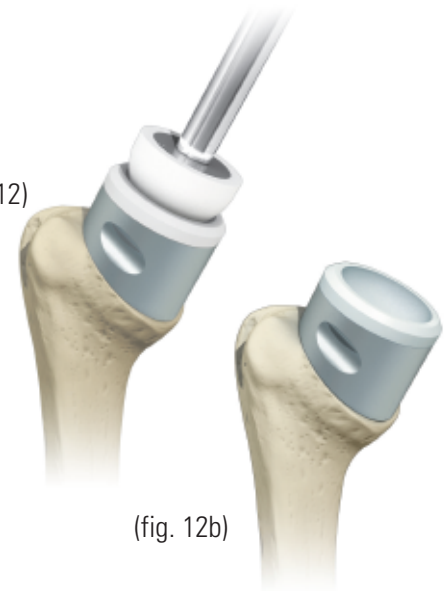
The definitive polyethylene insert is positioned, aligning its positioning marker with the adapter lug. It is then impacted using the impactor for the Aequalis® Reversed standard insert (fig. 12).

The assembly is finished (fig. 12b).

(fig. 11)



(fig. 12)



(fig. 12b)

● B Aequalis® Cemented or Aequalis® Press-Fit stems

Note :

Prior to implanting the definitive implant, it is advisable to ensure the trunion has not been damaged.

Cleaning and drying the trunion prior to impacting is also recommended.

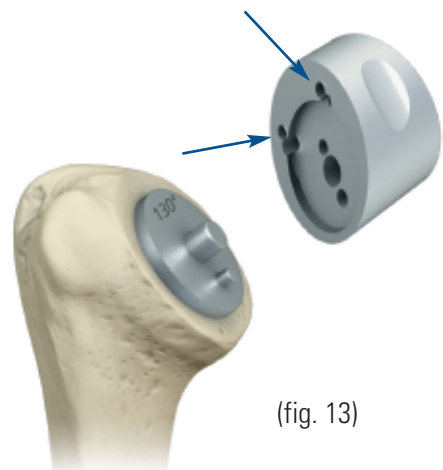
If the trunion is damaged, the humeral stem must be removed and replaced with an Aequalis® Reversed humeral stem.

1 - Preparation of holes for the u-clip

These stems have no threaded hole in the trunion of the collar.

The assembly is secured with a posterior u-clip maintained by two screws (fig. 13).

(fig. 13)



SURGICAL TECHNIQUE

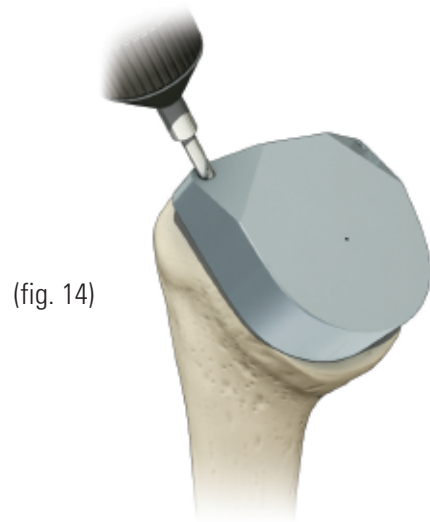
It is necessary to drill two holes tangential to the collar to prepare a housing for the hooks of the u-clip (in cement or bone).

The drill guide is positioned on the collar of the stem (fig. 14). It is important that the drill guide is positioned flush with the collar.

Holes are made using a \varnothing 5 mm drill bit inserted until it bottoms out on the drill guide.

The final stage of the humeral preparation process consists of passing the curette lightly under the collar (fig. 15) to ensure clearance for the u-clip.

Once the housing under the collar is sufficient for the insertion of the hooks, the adapter may be implanted.



(fig. 14)



(fig. 15)

SURGICAL TECHNIQUE

2 - Impacting of the Aequalis® Reversed Adapter

Before the installation of the adapter, verify the metallic u-clip is mobile. If it is not, you will need to slightly unscrew the two screws further.

Note :

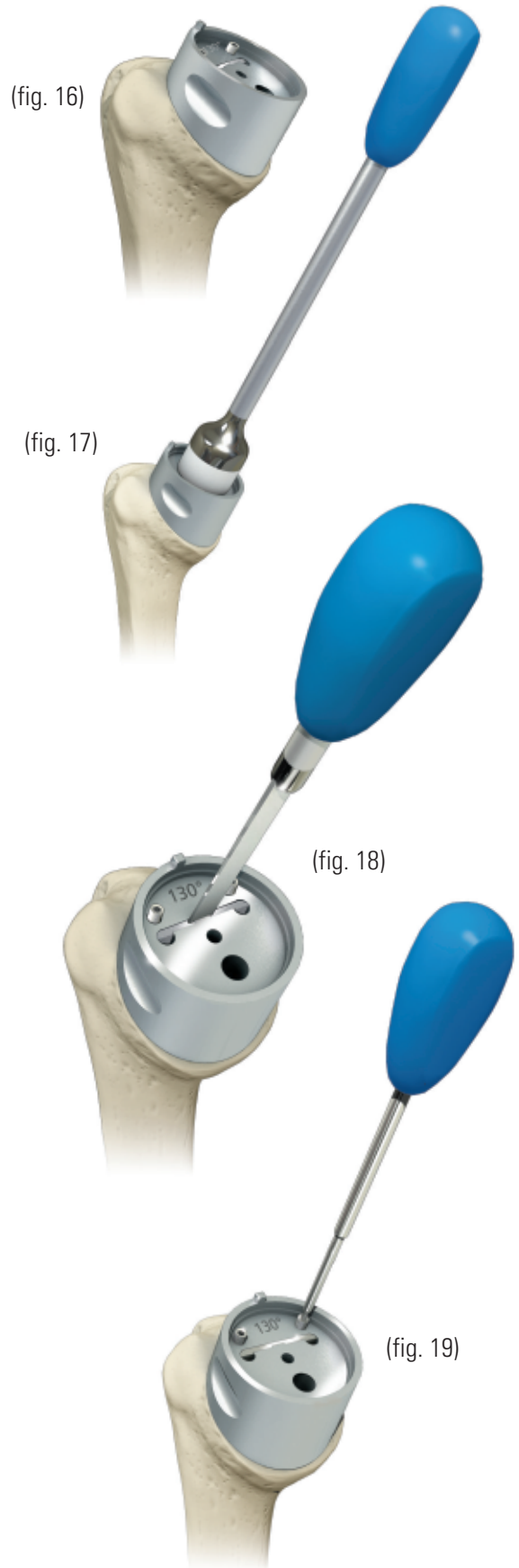
Prior to implanting the definitive implant it is advisable to ensure that the trunion has not been damaged. Cleaning and drying the trunion prior to implanting is also recommended. If the trunion is damaged, the humeral stem must be replaced with an Aequalis® Reversed Humeral stem.

The adapter is positioned on the trunion of the collar (fig. 16), then impacted using the specific impactor, to set the trunion lock (fig. 17).

3 - Securing the assembly

The u-clip is pushed towards the base using the u-clip pusher (fig. 18).

Alternate tightening (fig. 19) of the pressure screws in a progressive manner is necessary to ensure correct positioning of the hooks underneath the collar and to prevent the u-clip from becoming skewed.



Aequalis® Reversed Adapter

SURGICAL TECHNIQUE

Note : the screws head must be flush with the base of the housing in order to ensure complete seating of the polyethylene insert (fig. 20).

The definitive polyethylene insert is positioned, aligning its positioning marker with the adapter lug. It is then impacted using the impactor from the Aequalis® Reversed instrumentation set (fig. 21).

Assembly is finished (fig. 22).

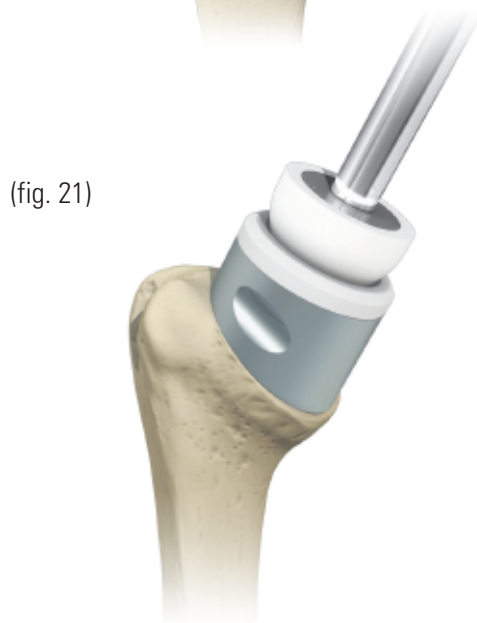
● 6. Reduction of the implant

The implant is then reduced into the joint. Closure and rehabilitation protocol should be the same as the Aequalis® Reversed.

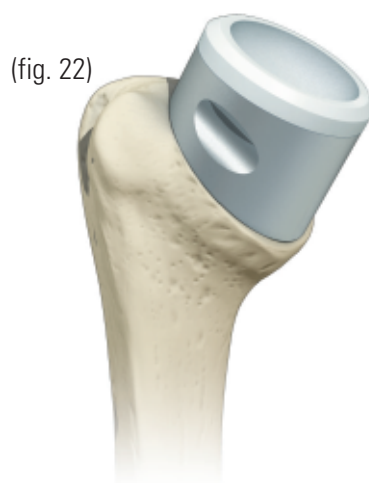
In some cases where the existing humeral stem is too proud, the muscles are too tight, or the size of the adapter is inappropriate, the reduction may lead to an over tensioning of the soft tissues, or may even be impossible. In these instances, it is strongly recommended to remove the humeral stem and replace it with an Aequalis® Reversed humeral stem.



(fig. 20)



(fig. 21)

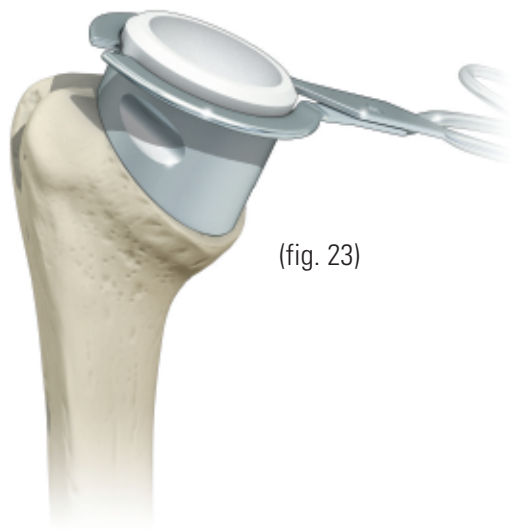


(fig. 22)

EXTRACTION

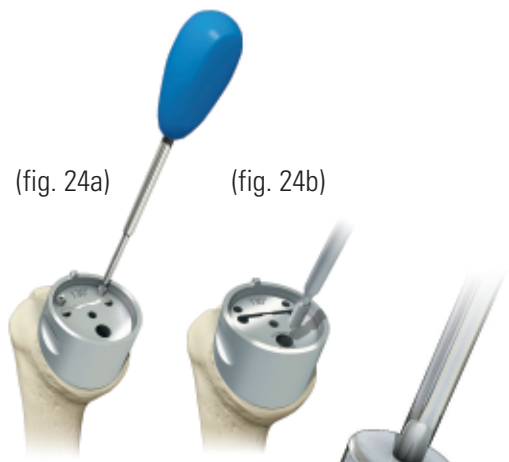
● 1. Extraction of the Polyethylene insert

The inserts are removed with an extraction clamp which slides between the plastic and the metal. It is tightened and lightly maneuvered from top to bottom to remove the insert (fig. 23).



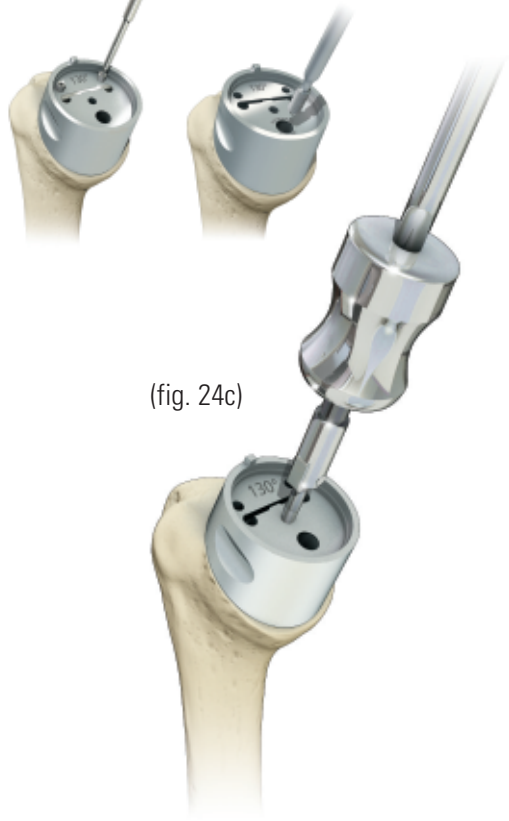
● 2. Unscrewing of the safety assembly

The extraction of the metaphysis begins by:
- removing the screws of the u-clip (fig. 24a),
- or removing the central screw (fig. 24b).



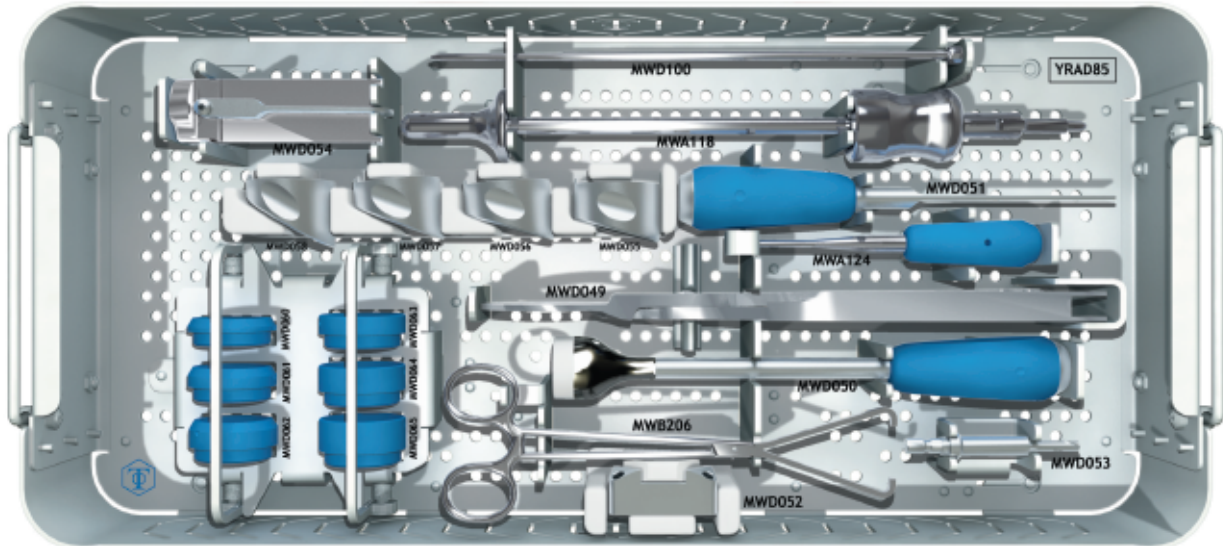
● 3. Extraction of the Adapter

The Aequalis® Reversed Adapter is extracted using an Aequalis® standard slap hammer extractor threaded in the center hole of the adapter (fig. 24c).



INSTRUMENTATION

Ref. YKAD85



Instruments

Instruments	Reference
Impactor	MWD050
Hexagon Screwdriver 3.5 mm	MWA124
U-Clip Pusher	MWD051
Drill Guide	MWD052
∅ 5 mm Drill Bit	MWD053
Goniometer	MWD054
Orientation rod for Goniometer	MWD100
Slap Hammer Extractor	MWA118
Humeral Insert Extractor	MWD049
Humeral Insert Clamp	MWB206

Trial Insert

Sizes	Reference
∅ 36 +6mm	MWD060
∅ 36 +9mm	MWD061
∅ 36 +12mm	MWD062
∅ 42 +6mm	MWD063
∅ 42 +9mm	MWD064
∅ 42 +12mm	MWD065

Trial Adapter

Inclination	Reference
125°	MWD055
130°	MWD056
135°	MWD057
140°	MWD058

NOTES

IMPLANTS

Aequalis® Reversed Adapter Metaphysis

Description	Reference
Metaphysis 125°	DWD855
Metaphysis 130°	DWD856
Metaphysis 135°	DWD857
Metaphysis 140°	DWD858

Packaged with locking screw DWB060 (CoCr)



Polyethylene Insert

Description	Reference
Lateralized Insert ø 36 mm +6 mm	DWD860
Lateralized Insert ø 36 mm +9 mm	DWD861
Lateralized Insert ø 36 mm +12 mm	DWD862
Lateralized Insert ø 42 mm +6 mm	DWD863
Lateralized Insert ø 42 mm +9 mm	DWD864
Lateralized Insert ø 42 mm +12 mm	DWD865

